

## REMARKS

### Status of the Claims

Claim 1 has been amended. Support for the amendments are on page 3, lines 18-26 and page 6, line 25. No new matter has been added. Claims 3, 7 and 8 have been canceled. Claims 2, 4 and 5 are original claims and Claim 9 has been previously presented.

### *Claim Rejections – 35 USC § 103*

Claims 1-6 and 9 were rejected under 35 U.S.C. 103(a) as being unpatentable over Mizutani et al. U.S. 5,780,530 in view of Kim U.S. 4,983,247 further in view of Chu et al. U.S. 6,750,309.

Applicants have amended the claims to more clearly point out their invention which is directed to a process for applying a primer layer onto fiber reinforced plastic automotive substrates and curing the primer layer with high energy radiation and moisture and subsequently applying a top coating which may be a single or multiple layer top coating to this primer layer. The purpose of this primer layer and its dual stage curing is to effectively suppress the occurrence of popping or blistering defects in the subsequently applied layer or layers of a top coating when the top coating is thermally cured. The claims have been amended to point out that popping and blistering in the top coat are suppressed by the novel process. The unique polyurethane binder of the primer has free radically polymerizable olefinic double bonds in combination with trialkoxy silane groups. The binder is cured by high energy radiation which polymerizes the olefinic double bonds and by moisture which cures the trialkoxy silane groups by the formation of siloxane bridges. Moisture curing of the silane groups provides adequate crosslinking to the primer coating in areas that may be shaded from the high energy radiation.

None of the references cited in the rejection mention this problem of popping and blistering defects in top coat layer(s) applied onto fiber reinforced plastic automotive substrates during its/their thermal curing or how this problem can be solved.

Mizutani et al. U.S. 5,780,530 is deficient as follows:

(1) Mizutani does not recognize the problem solved by Applicants' novel process, i.e., suppression of popping and blistering of the top coat that is applied

over a fiber reinforced plastic automotive substrate. Applicants use a dual curing primer cured by radiation with high energy and subsequent curing by moisture.

(2) Mizutani does not show fiber reinforced automotive substrates. Examiner combined Kim with Mizutani to show fiber reinforced doors and other auto body parts but Kim is not related or directed to the coating of such parts or the recognition of the problems involved with coating such parts.

(3) Mizutani does not show the application of a primer layer under a topcoat, which is Applicants' process, but merely discloses that the coating composition, which is not the dual curing coating composition used as a primer in Applicants' process, can be applied to a substrate and that the coating composition can be used over primers, such as, epoxy primers, polyurethane modified epoxy primers or polyester primers (see Mizutani col. 14, lines 24-31).

(4) Mizutani simply does not show the dual curing primer composition that Applicants require in the process as set forth in the amended claims.

Chu was cited to show dual curing coating compositions but does not show a polyurethane primer as set forth in the amended claims nor does Chu recognize the problems of popping and blistering in a top coat applied over a primed fiber reinforced automotive substrate that Applicants' have solved by their novel process which utilizes the particular polyurethane primer layer to avoid these problems. The polymer taught by Chu is a block copolymer having urethane segments and siloxane segments. Chu only shows a block copolymer structure wherein the alkoxy silane groups are part of the backbone of the polymer wherein the silicone is substituted by OR<sup>6</sup> substituent, which according to Chu is a hydrocarbon. However, these are not pendent trialkoxy silane groups as required by the polyurethane used in Applicants' process since in Chu, the silicon is within the backbone of the polymer and is not a pendent group. The amended claims clearly state that the polyurethane used in Applicants process has 1-10% by weight, silicon bound in the pendent trialkoxy silane groups. Chu does not have pendent alkoxy silane groups since the silicon is bound in the backbone of the block polymer. In sum, Applicants utilize a conventional polyurethane having pendent trialkoxyl silane groups and C=C double bonds curable by high energy radiation which is not taught by Chu.

There is no suggestion or teaching in either Chu or Mizutani that the block copolymers of Chu would be useful in Mizutani's process. Even if these two

references were combined Applicants' process would not result since the block polymers of Chu are not those used in Applicants' process as set forth in the amended claims. Further, neither reference recognizes the problem solved by Applicants of the suppression of popping and blistering of topcoats applied over fiber reinforce automotive substrates. The obviousness rejection based on Mizutani, Chu and Kim must be withdrawn.

Claims 1-3, 6, 9 were rejected under 35 U.S.C. 103(a) as being unpatentable over Okada et al. U.S. 2003 0109595 in view of Persson et al. U.S. 6,358,626 and in further view of Gaglani U.S. 5,312, 943. None of these references alone or in any combination teach or suggest Applicants' invention and in particular do not recognize the problem solved by Applicants' novel process of suppressing blister and popping defects in a topcoat applied over a fiber reinforce plastic automotive substrate. Nowhere is this problem even mentioned in these cited references.

Okada only teaches the use of an acrylic resin that has attached thereto through a urethane linkage polymerizable unsaturated group and does not show or teach the polyurethane binder containing moisture curable trialkoxy silane groups as set forth in the amended claims. Okada par. 14 shows the preparation of an acrylic resin having a hydroxyl group that subsequently is reacted with an isocyanate with a polymerizable group see par. 19. This is not the polyurethane binder used in Applicants' novel process that contains trialkoxy silane groups as set forth in the amended claims.

Persson only teaches that coatings can be applied to reinforced plastic autobody parts but as recognized by the Examiner does not show the polyurethane binder having C=C double bonds for radiation curing and trialkoxy silane groups for moisture curing.

Gaglani is primarily directed to applying coatings over electronic printed circuit boards but not the fiber reinforced plastic automotive parts which is Applicants' process. Nor does Gaglani recognize the problems solved by Applicants process, i.e., the suppression of popping and blistering in the top coat applied to a primed fiber reinforced automotive substrate. Gaglani never mentions applying a top coat to substrates primed with his coating compositions. The reason is that Gaglani is directed to priming circuit board which are never topcoated once the primer layer is applied. Popping and blistering only occur on baking of the topcoat after application

to the primer layer. Those skilled in the art would never topcoat a primed circuit board and subject it to further baking under the same conditions one would bake an automotive topcoat for fear of damage to the printed circuit. Hence, there is no teaching or suggestion of application of a topcoat and obviously, Gaglani does not recognize the problem that Applicants' have solved with their process.

In view of the above, the obviousness rejection of Claims 1-3, 6, and 9 based on Okada, Persson and Gaglani should be withdrawn.

Claim 4 was rejected under 35 U.S.C. 103(a) as being unpatentable over Okada et al., supra, in view of Persson et al. supra, further in view of Gaglani, supra, and further in view of Bergstrom et al. U.S. 6,384,125. The above comments in regard to Okada, Persson, and Gaglani also apply to this rejection and will not be repeated.

Bergstrom is not even remotely related to Applicants' novel coating process but is directed towards making a modified silica filler. Bergstrom simply does not relate to Applicants process or to the processes disclosed by Gaglani or Okada. Bergstrom discloses the curing of silicone sealants, which are not coating compositions, and mentions that hydroxyl containing radicals can be present. There is no motivation to combine Bergstrom with Okada or Gaglani. The Examiner has used Applicants' own invention as a blue print in an attempt to reconstruct Applicants' novel process from the art. Without the guidance of Applicants' disclosure, one skilled in the art would never look to Bergstrom which is entirely unrelated to Applicants' novel process. This rejection based entirely on hindsight reconstruction must be withdrawn and Claim 4 allowed.

Claim 5 was rejected under 35 U.S.C. 103(a) as being unpatentable over Okada et al., supra, in view of Persson et al., supra, further in view of Gaglani, supra, and further in view of Mizutani et al., supra. Simply because Mizutani discloses several electrically conductive pigments doesn't make up for the many deficiencies of that reference that have been pointed out above. The aforementioned comments in regard to Okada, Persson, and Gaglani also apply here and will not be repeated. The rejection of Claim 5 over the aforementioned references must be withdrawn.

**SUMMARY**

In view of the foregoing amendments and remarks, Applicants submit that this application is in condition for allowance. In order to expedite disposition of this case, the Examiner is invited to contact Applicants' representative at the telephone number below to resolve any remaining issues. Please charge any fee due which is not accounted for to Deposit Account No. 04-1928 (E.I. du Pont de Nemours and Company).

Respectfully submitted,

Date: January 20, 2006



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